MCFRS IN-SERVICE TRAINING PROGRAM

OPERATIONS AT GARDEN APARTMENT FIRES

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INTRODUCTION:

Initial Company Operations are critical in providing the basis for a safe, quick and effective fire attack at garden apartment fires. The engine company is primarily responsible for establishing a water supply, performing a proper size up, advancing the appropriate hand line based on the fire load and occupancy, confinement and extinguishment. The truck company is responsible ventilation, forcible entry, ladders, rescue, salvage and overhaul. The Rescue Squad is primarily responsible for the primary and secondary searches as well as controlling utilities. There are several factors affecting decisions leading to the accomplishment of these tasks, all of which may be based upon specific strategic objectives relating to:

Rescue
Exposures
Confinement
Extinguishment
Overhaul

OVERVIEW: This In-Service module will require operational personnel to identify structures of garden apartment construction in their first due areas then participate in basic skills that relate to the successful deployment of hand lines and the positioning of suppression apparatus at those locations. In addition, operational personnel will discuss the tactics of combating fires at garden apartments as they relate to strategic objectives such as:

- The protection of life
- The protection of search crews
- Protection of exposures
- The prevention of vertical and horizontal fire spread
- Fire confinement

OBJECTIVE: Operational personnel will be able to perform the listed practical evolutions with proficiency:

- Stretch a hand line for initial attack to a “set back” greater than 200 feet
- Stretch an attack line to an upper floor of a structure via a ground ladder
- Standpipe pack deployment utilizing additional hose in the officers bag to complete the hose stretch
- Alternative method to deploy an attack line to an upper floor of a building not stand piped
- Positioning engine company apparatus (first or third arriving) to facilitate aerial placement or the access of later arriving units
- Positioning engine company apparatus to take water from hydrants having reduced access

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CRITICAL DISCUSSION POINTS

1) Construction

A. Garden apartments can be built of wood frame or ordinary construction

B. They can be three stories or greater in height

C. Frame buildings are of platform construction

D. Typically have brick veneer

E. Usually built in sections of four apartments per floor but can have more

F. Interconnection of sections can create large buildings

G. Wall assemblies typically have wood studs

H. The wall between adjoining sections can be of masonry construction or other fire-rated material.

I. Stack construction creates inherent void spaces that allow for fire spread

J. Combustible siding (cedar shake, vinyl) may pose a potential conflagration hazard permitting auto exposure to upper floors and other closely spaced buildings

K. Plumbing fixtures are vertically aligned, one above the other, creating a route for fire spread from one apartment on the ground floor to possibly the attic space and everything in between.

2) Roof Assemblies

A. Pitched or flat

B. May be constructed of solid wooden beams, light-weight truss, wooden “I” beams, or steel bar joist

C. The roof can over hang the side walls creating eaves; this over hang may not be fire-stopped and can bypass fire walls

D. Each partitioned building may not have fire-stopping thus creating a common attic

E. Fire starting in one apartment can extend to the roof area threatening other apartments and adjoining buildings

F. Windows with eaves in close proximity can be direct routes of fire extension by way of auto-exposure

G. Required fire-stopping many times is breached or removed

3) Access

A. Illegal parking can prevent apparatus access

B. The front doors of individual apartments usually open into common hallways with stairs

C. Fire and smoke entering these stairs may threaten civilian evacuation routes and fire attack

D. The first floor may be below ground level

E. Landscaping in the rear may permit a walk out patio at the ground floor unit

F. Buildings are often set back from the street

G. Buildings may have separate entrances to the common hall way from the rear; there may be terrace level apartments with separate exterior entrances as well as entrances into the common hallway

4) Problems

A. Building may be occupied at any time with the greatest challenges between 12:00 a.m. and 8:00 a.m.

B. Fire typically has a head start due to delay in notification

C. And/or occupants attempting extinguishment themselves

D. Tenants fleeing may leave doors open

E. Stacked construction permits fire spread thru interconnected void spaces throughout the building

F. There may be only one exit from the building

G. Hydrants may be a considerable distance or blocked out due to parked cars or fire apparatus positioning

H. Limited resources; the rescue priority may delay fire attack

I. Storage areas can house heavy fire loads with an abundance of combustibles; can be very large areas

J. Gas meters may be located in these storage areas

k. Electrical conduit and cable lines suspended from ceilings could become entrapment hazards for firefighters

5) Size-up Considerations

A. Has the fire entered the void spaces? Where is the fire located? One apartment or two? Where is the fire going? Where will I have to make my stand?

B. Are the gable vents clear or is smoke coming from them?

C. Are there apparent rescues?

D. Offensive or defensive mode?

E. Is the building a middle of the row or end unit?

6) Strategic and Tactical Considerations

A. Request sufficient resources early (2nd or 3rd alarm)

B. perform primary search immediately

C. Choose the appropriate line based on the amount of fire present; consider stretching the leader line for set back structures to reduce friction loss. ***Consider "marrying up" two companies in order to get the first line in place***. ***The fire goes as the first line goes!***

D. A sufficient amount of ground ladders (24' to 35') must be thrown to the building (front and rear) to facilitate rescue for possible trapped occupants and to create a 2nd means of egress for interior crews. The need for ground ladders to the rear of the structure can not be understated.

E. A quick and aggressive offensive interior attack should be considered to address the rescue problem as well as confinement.

F. consider alternatives to stretching additional lines into the structure to keep the stairwell accessible (no more than two lines should go thru the main entrance if possible)

G. **Ventilation is a must**. Horizontal ventilation and, if fire is suspected to be in the attic or cockloft, vertical ventilation. If the roof is of truss or light weight construction and vertical ventilation is required, the use of aerial apparatus to support vent operations should be utilized.

H. confine the fire to the apartment of origin; protect the interior stairs (if possible, close the door to the fire apartment until interior attack is in place)

I. Companies must be assigned to check the top floor; ceilings and walls must be opened up conjunction with checking the attic and cockloft for fire extension.

J. If fire has extended to the cockloft, an effort must be made to have greater alarm companies take positions in the exposure buildings to cut off extension.

K. If fire is threatening the eaves of the roofline, wet them down to prevent additional fire spread thru the roof ***(do not direct hoses streams into any window where fire is venting; always notify command before directing any exterior line)***

L. do not rely on the use of thermal imaging cameras to locate fire extension; open up walls and ceilings whenever a working fire is in progress

M. engine drivers should consider utilizing a “heavy water hook-up” upon arrival to maximize water supply in the event operations transition to a defensive mode of attack

N. consider strategic placement of tower ladders early into the incident; when transitioning from offensive to defensive operations, ensure that adequate water supply is available to support tower operations ***(hand lines should be shut down to augment water supply for the towers when in the defensive mode)***

O. greater alarm engine companies should be prepared to lay lines into the incident from additional hydrants to support water supply operations

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REVIEW QUESTIONS

1) List four causes of rapid fire spread in garden apartments.

2) What are some signs that a cockloft fire is present?

3) List two hazards that are present in storage room fires

4) Define the term “stack construction”

5) List three access problems associated with garden apartment fires

6) List three roof construction features of garden apartments

7) If fire is present in a terrace level apartment, describe the probable route of travel for fire extension and why

8) Discuss fire travel to the eaves of the roof line

10) Discuss firewall materials and construction in garden apartments

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PRACTICAL SKILLS SCENARIOS

1) **Objective:** Personnel shall demonstrate, with proficiency, the deployment of a minimum length 200’ leader line (2”1/2 or 3”) with a gated wye and attach a 150’ stand pipe pack for fire attack.

[Motivation: You are dispatched to a garden apartment fire with the unit of origin located at a substantial setback from the location of the engine company.]

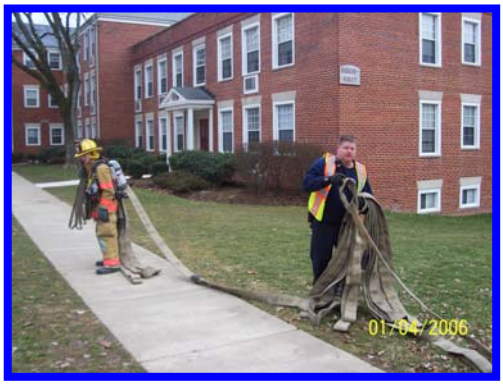
a. Unit shall park at a given location to provide best access for attack crew and later arriving apparatus

b. The unit officer shall identify the correct building, shoulder the stand pipe pack while dressed in full PPE, and walk towards the front of the building dropping the pack where they want the leader line directed

c. The small linesman, with the assistance of the driver, shall shoulder and stretch the leader line to the location of the stand pipe pack while dressed in full PPE, make the connection utilizing the gated wye, call for water to the wye, flake out the hose in front of the structure, and await further instructions from the officer

The small linesman pulls and stretches the leader line.

The officer carries the standpipe pack and sets it down where the leader line is to be directed



The driver assists with the advancement of the leader line

The officer and small linesman work together to connect the standpipe pack to the leader line before advancing into the building

2) **Objective:** Personnel shall demonstrate the skill of extending an attack line to the second floor window of a structure using a ground ladder with proficiency.

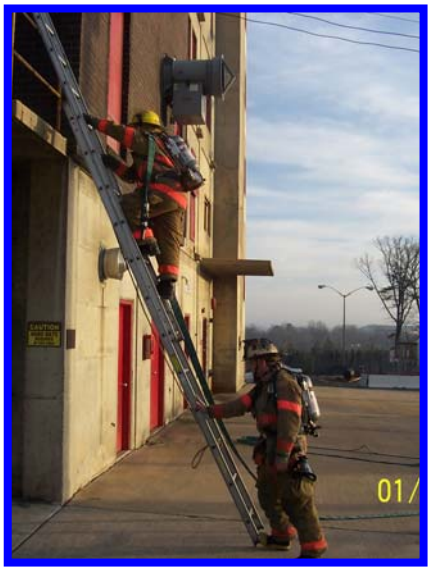
[Motivation: You are dispatched as the third due engine with the SOP assignment of stretching a line to the floor above the fire. Upon arrival, two hose lines are observed going thru the front entrance of the structure.]

a. The officer and the small linesman shall retrieve a 24' extension ladder from the engine company, carry and raise it to the desired entry point

b. The small linesman will stretch a pre-connected line from the engine company to the base of the ladder

c. Once the ladder is secured and in place under the ledge of the designated window with the appropriate climbing angle, the hose line shall be advanced up the ladder***(with a heel person in place)***and into the window both dry and then charged ***(the practical application for the dry line procedure is to stretch a line to an area uninvolved with fire given ample time to complete the stretch safely before having the line charged; if there is evidence of fire extension, the line should be charged beforehand. Refer to attachments from The Essentials of Firefighting 4th edition)***

Hose is stretched to the base of the ladder



The ladder is heeled while the small linesman and officer climb with the advancing attack line

3) **Objective:** Personnel shall demonstrate, with proficiency, the extension of a standpipe pack while utilizing additional hose in the officer's bag to complete the hose stretch.

[Motivation: After connecting your unit's standpipe pack to a leader line and stretching it thru the intended structure, you are redeployed to another area of the building. Your attack line, because of its length, is unable to reach its destination.]

a. the officer will determine the need for an additional length of hose
b. the officer will advance the officer's bag with the additional section of hose to the nozzle person for connection
c. working as a team, the firefighters will connect the additional section via the breakaway nozzle, advance the additional length of hose then charge the line from the bale to ensure flow
d. if the nozzle is not of the breakaway type, then the additional section of hose is to be extended at the nozzle

1) team retreats from the fire area
2) a team member places the gated wye in the off position
3) uncouple the hose at the nozzle
4) add the additional section of hose and flake out to minimize kinks
5) charge the gated wye and extend the line back into the fire area

The officer's bag is packed with the load split for fast deployment from either end of the hose

The small linesman and the officer work together to disconnect the tip from the break away nozzle and reconnect the hose from the officer's bag

The line can then be flaked out while awaiting water from the control person at the bail

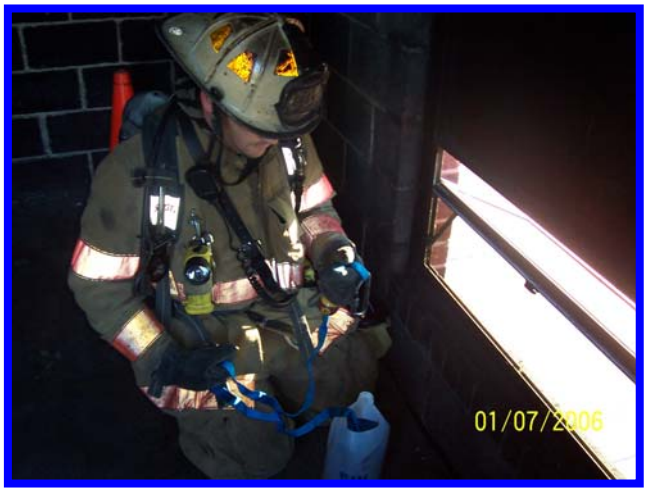
4) **Objective:** Personnel shall demonstrate an alternative method in deployment of an attack line to an upper floor of a building not stand piped.

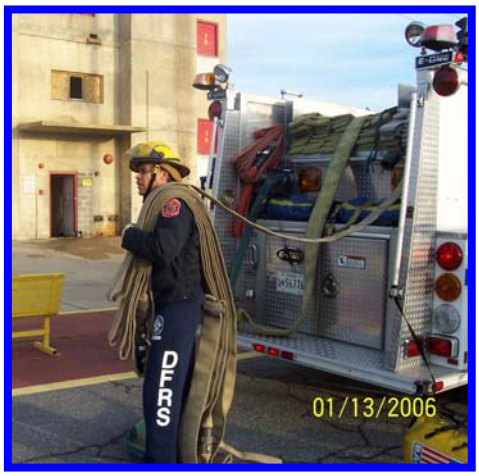
[Motivation: You are dispatched on an adaptive and walk to the third floor apartment of a non-stand piped mid-rise building finding fire in the apartment of origin. You have taken your standpipe pack and officers bag and want to connect to a leader line without leaving the building to retrieve it.]

a. Team retreats from the fire area confining the fire to the apartment of origin
b. Unit officer radios the engine driver and instructs them to stretch a leader line to a designated location outside the building
c. team uses a 50'-75' section of utility rope or webbing attached to a carabineer [in the officers bag] to haul up the dry leader line to the window of the designated area
d. once the leader line is inside the window and secured, the standpipe pack with gated wye is connected and flaked out for advancement

Although there are alternatives to this method, this procedure helps to ensure that the gated wye with all available attack line is kept inside the structure to facilitate the use and advancement of the back up line.

The webbing can be kept in a container (plastic 1 gal. jug) and stored in the officer's bag for convenience





The officer tosses the line out of the designated window to the driver

The driver is radioed and advised what location to hand-jack the hose

The webbing is secured to the hose

Then hoisted up to the window

5) **Objective:** The Driver shall demonstrate proper positioning of the engine company apparatus (first or third arriving) to facilitate aerial placement and the access of later arriving units.

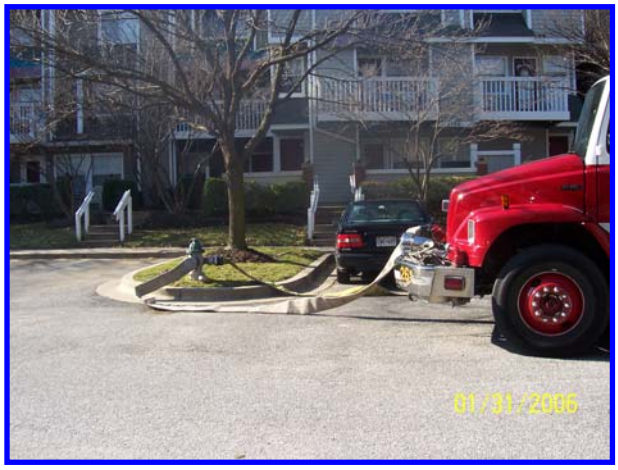
[Motivation: As the first arriving engine, you choose the most convenient hydrant which happens to be directly in front of the structure of origin. Your positioning could have an adverse impact on aerial placement.]

a. If arriving ahead of the aerial, consider forward laying from the hydrant as opposed to using your front suction. This will provide better access for later arriving companies and still provide adequate water supply without the use of a supply engine. [Remember, a single 4" line 500' long can supply up to 625 gpm with a residual hydrant pressure of 40psi] (MFRI Pump Operator Student Manual July 1998). Limiting your forward lay to less than 100' still provides the maximum flow for 4" hose of approximately 800gpm (contingent upon residual hydrant pressure). **Utilizing a "heavy water hook-up" further maximizes water supply capabilities**.

b. When laying out from a hydrant or when expanding the water supply of another engine company, ensure that your unit will not block access to later arriving companies; consider "curbing" or "lawning" the engine company when conditions are appropriate. The officer and driver/operator should discuss:

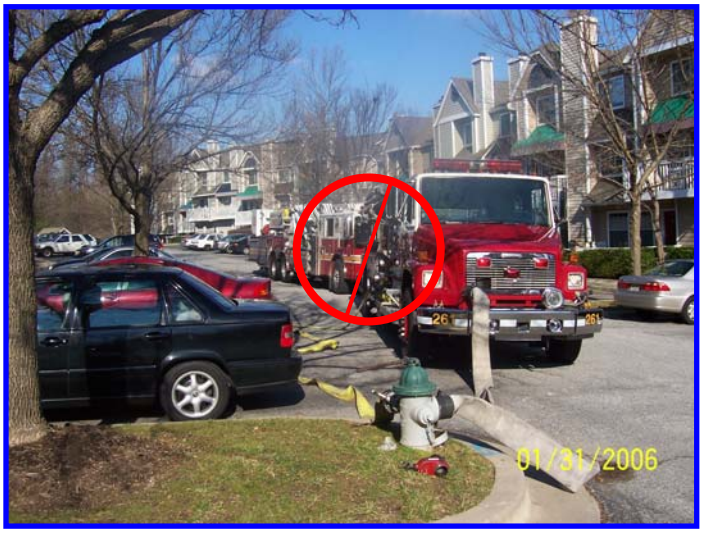
1. How can a significant amount of precipitation adversely affect the ability to gain traction for departure as the incident de-escalates?
2. Is the curb too high resulting in instability of the unit?
3. Will the intended "soft" area support the weight of my unit?
4. Is the fire significant enough that positioning the unit in an unorthodox manner adds a major benefit to the mitigation of the incident? (risk vs. benefit)

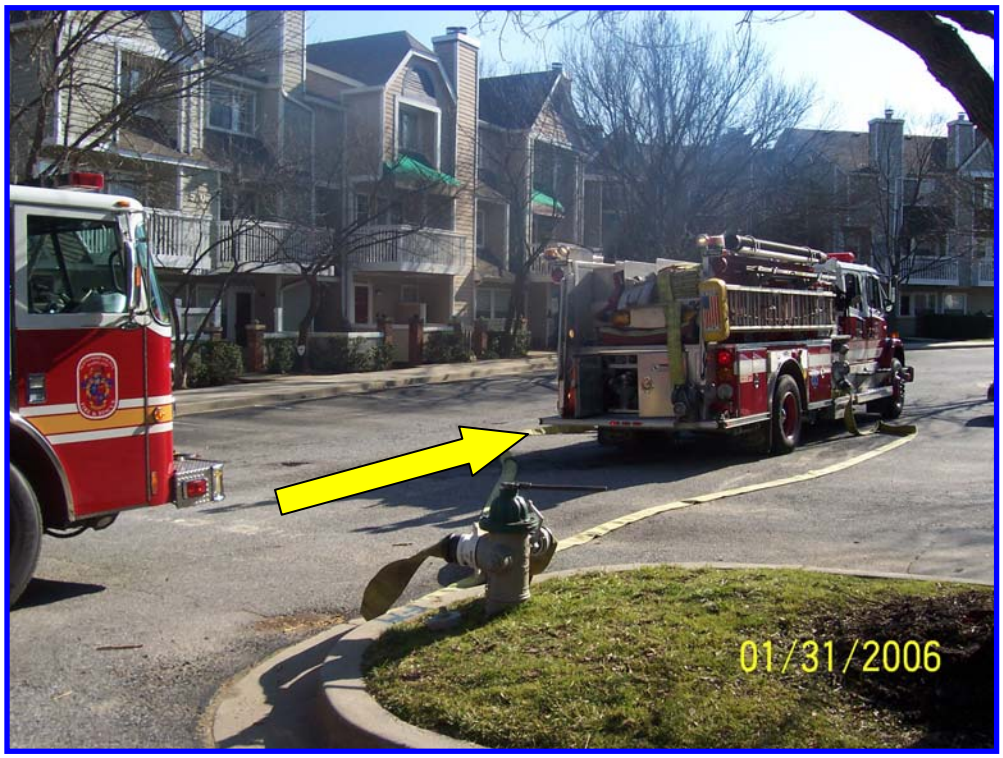
The hydrant in this photo sits directly in front of the structure of origin

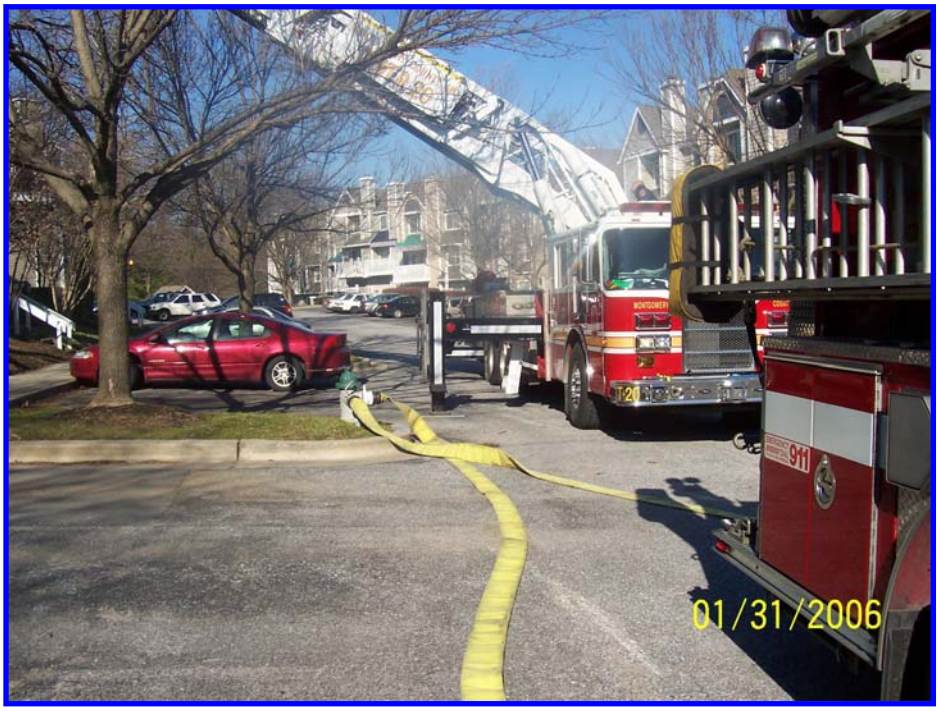


If the engine elects this hydrant as their water supply,

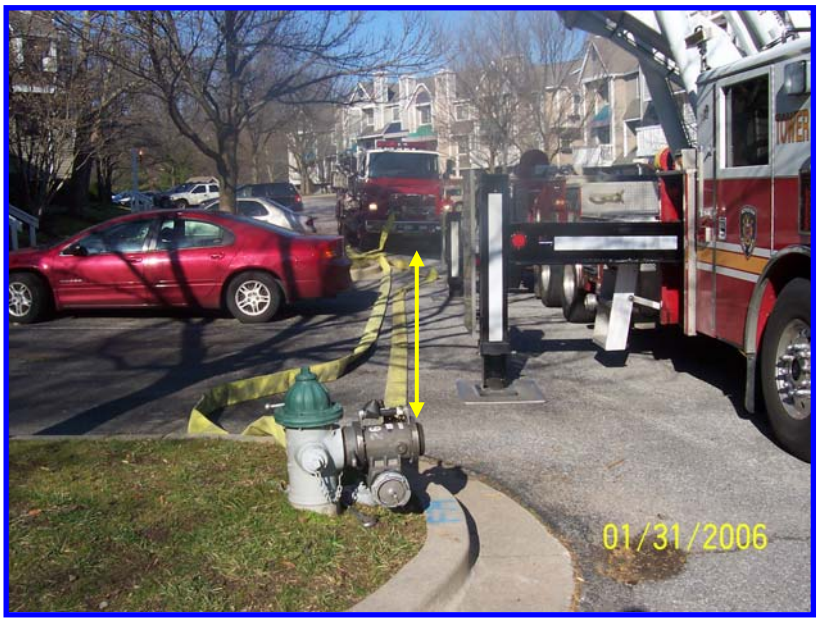
Then the aerial would have restricted access if responding from the same direction



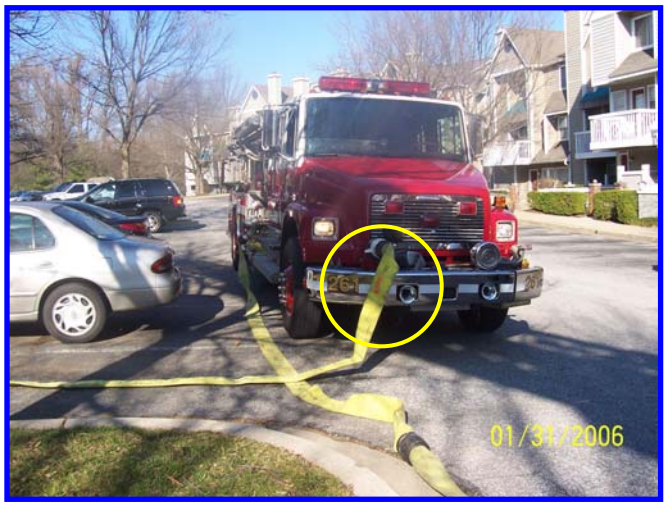




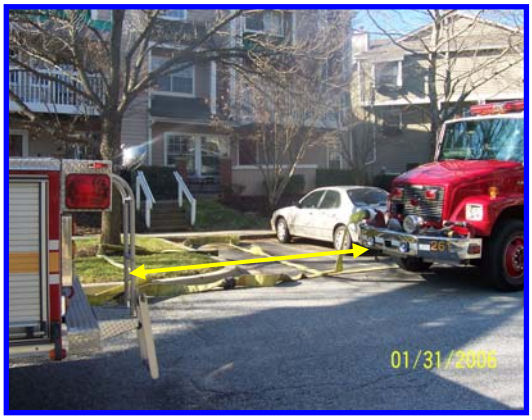
Consider driving past the hydrant to facilitate aerial access to the structure. Use short lengths of hose to make your hydrant connections (consider using a "heavy water" hook-up) Drivers should be well versed in the use of various adapters.



Another option would be to allow the aerial to respond ahead of the engine thus allowing for optimum positioning. The engine can still make their connections from the rear of the aerial



Notice how the front intake was utilized with a longer section hose. Creativity is strongly recommended.



Leave a space cushion behind the aerial to facilitate the removal of ladders

Engine placement has a major impact upon aerial placement and the optimum scrub area provided.